

*Amendment and Response to 1<sup>st</sup> Office Action*  
U.S. Application Serial No. 10/800,353  
Attorney Docket No. MR/98-004.RE  
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1-24. (Canceled)

25. (New) A coil interface for coupling a single coil system to a magnetic resonance (MR) system equipped with a predetermined number of receivers, said single coil system having a plurality of coil elements, said coil interface comprising:

(a) a plurality of input ports, each of said input ports for connecting to one of said coil elements of said single coil thereby enabling receipt of an MR signal therefrom;

(b) a plurality of output ports for connecting to the receivers of the MR system; and

(c) an interface circuit interconnected between said input ports and said output ports, said interface circuit capable of being selectively switched between (i) a first mode in which each of two of said input ports is coupled therethrough to a different one of said output ports thereby enabling said MR signals separately received by said two input ports to be routed to a different one of the receivers of the MR system; and (ii) a second mode in which said MR signals separately received by said two input ports are constructively combined and passed to one of said output ports thereby enabling the constructively combined MR signals to be routed to a same one of the receivers of the MR system.

26. (New) The coil interface of claim 25 wherein said single coil system is a quadrature coil.

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27. (New) The coil interface of claim 25 wherein said single coil system is a quadrature coil such that the MR signals respectively received by each of said two input ports collectively represent a circularly polarized MR signal that said quadrature coil is designed to receive.

28. (New) The coil interface of claim 25 wherein for the second mode of operation the MR signals are constructively combined to increase the field of view.

29. (New) The coil interface of claim 25 wherein for the second mode of operation the MR signals are constructively combined to improve signal-to-noise ratio.

30. (New) The coil interface of claim 25 wherein said interface circuit includes at least one PIN diode and at least one combiner.

31. (New) A coil system for coupling to a magnetic resonance (MR) system, said MR system equipped with a predetermined number of receivers, the coil system comprising:

(a) a plurality of coil elements; and

(b) a coil interface including:

(I) a plurality of input ports, each of said input ports for connecting to one of said coil elements thereby enabling receipt of an MR signal therefrom;

(II) a plurality of output ports for connecting to the receivers of the MR system; and

(III) an interface circuit interconnected between said input ports and said output ports, said interface circuit capable of being selectively switched between (i) a first mode in which each of two of said input ports is coupled therethrough to a different one of said output

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ports thereby enabling said MR signals separately received by said two input ports to be routed to a different one of the receivers of the MR system; and (ii) a second mode in which said MR signals separately received by said two input ports are constructively combined and passed to one of said output ports thereby enabling the constructively combined MR signals to be routed to a same one of the receivers of the MR system.

32. (New) The coil system of claim 31 wherein said coil system is a birdcage coil.

33. (New) The coil system of claim 32 wherein said birdcage coil is tapered birdcage coil.

34. (New) The coil system of claim 31 wherein said coil system is a quadrature coil.

35. (New) The coil system of claim 31 wherein said coil system is a quadrature coil such that the MR signals respectively received by each of said two input ports collectively represent a circularly polarized MR signal that said quadrature coil is designed to receive.

36. (New) The coil system of claim 31 wherein for the second mode of operation the MR signals are constructively combined to increase the field of view.

37. (New) The coil system of claim 31 wherein for the second mode of operation the MR signals are constructively combined to improve signal-to-noise ratio.

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38. (New) The coil system of claim 31 wherein said interface circuit includes at least one PIN diode and at least one combiner.

39. (New) A neurovascular coil system for coupling to a magnetic resonance (MR) system, said MR system equipped with a predetermined number of receivers, the neurovascular coil system comprising:

- (a) a first coil having a plurality of coil elements;
- (b) a second coil having at least one coil element;
- (c) a coil interface including:

- (I) a plurality of input ports, each of said input ports for connecting to one of said coil elements of said first and said second coils thereby enabling receipt of an MR signal therefrom;

- (I) a plurality of output ports for connecting to the receivers of the MR system; and

- (III) an interface circuit interconnected between said input ports and said output ports, said interface circuit capable of being selectively switched between (i) a first mode in which each of two of said input ports connected to one of said coils is coupled therethrough to a different one of said output ports thereby enabling said MR signals separately received by said two input ports to be routed to a different one of the receivers of the MR system; and (ii) a second mode in which said MR signals separately received by said two input ports are constructively combined and passed to one of said output ports thereby enabling the constructively combined MR signals from said one of said coils to be routed to a same one of the receivers of the MR system.

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40. (New) The neurovascular coil system of claim 39 wherein said first coil is a birdcage coil.

41. (New) The neurovascular coil system of claim 40 wherein said birdcage coil is tapered birdcage coil.

42. (New) The neurovascular coil system of claim 39 wherein the second coil is designed for the cervical spine region.

43. (New) The neurovascular coil system of claim 39 wherein the second coil is designed for the anterior neck region.

44. (New) The neurovascular coil system of claim 39 wherein said first coil is a quadrature coil.

45. (New) The neurovascular coil system of claim 39 wherein said one of said coils is a quadrature coil such that the MR signals respectively received by each of said two input ports collectively represent a circularly polarized MR signal that said quadrature coil is designed to receive.

46. (New) The neurovascular coil system of claim 39 wherein for the second mode of operation the MR signals are constructively combined to increase the field of view.

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47. (New) The neurovascular coil system of claim 39 wherein for the second mode of operation the MR signals are constructively combined to improve signal-to-noise ratio.

48. (New) The neurovascular coil system of claim 39 wherein said interface circuit includes at least one PIN diode and at least one combiner.